IT-3000 Series

Hardware Manual

(Version 1.02)

CASIO Computer Co., Ltd.

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Editorial Record

Manual Version no.	Date edited	Page	Content
0.90	June 2004		Tentative version
1.00	September 2004		Original version
1.01	February 2005	all	The hardware description for the C-MOS imager integrated models has been added.
1.02	June 2005	all	The hardware description for IT-3000M56E and IT-3000M56U has been added.

Preface

The IT-3000 series features a built-in high speed thermal printer capable of printing up to 28 lines per second. The terminal will run on the Microsoft® Windows® CE .NET operating system for easy development and integration into the enterprise. Its sturdy construction enables it to withstand a drop from a height of 1.2 meters and IP54 level sealing compliant with the IEC60950 standard allows it to be used in dust and wet environments. With Bluetooth and IrDA both integrated as standard, and a PC card slot for optional use of Wireless LAN and WAN cards.

This reference manual will describe the detailed hardware specifications on the IT-3000 series including IT-3000M53E, IT-3000M54E2, IT-3000M55E, IT-30000M55U, IT-3000M56E, and IT-3000M56U models. These models are referred in this manual as either "IT-3000" or "the terminal" unless otherwise described with specific description.

1. Overview

1.1 Features

Incorporates .NET technology
- Uses WindowsCE .NET 4.1 operating system.
- Makes effective use of .NET resources developed by other corporations.
- Employment of Embedded OS makes it possible to build a flexible WindowsCE system.

Enhanced communicating functions
- Covers GPRS/Wireless LAN, etc. by using various communication cards available from third parties.
- Built in Bluetooth Ver 1.1 module.
- The following protocol stacks are available for Bluetooth interface:
  GAP (Generic Access), SDP (Service Discovery), SPS (Serial Port), Dial-Up Network, File Transfer, and LAN.
- Security function (WEP 128 bits)

Superb scanning capability
- With the integrated C-MOS Imager in the models of IT-3000M55E, IT-3000M55U, IT-3000M56E, and IT-3000M56U only as standard it is possible to read 1D bar code/2D code symbologies, OCR fonts and to capture images.
- Multi-step reading and package reading functions.

Support of outstanding development environment
Ample Microsoft development tools provided for easy application development and an advanced debug environment.

1.2   Model Configuration, Options And Accessories

Table 1.1   Models

Model no.	Bluetooth	MCR	C-MOS	RS-232C interface		Remark
				8-pin	14-pin	
IT-3000M53E	Yes	No	No	Yes	Yes	Note 1
IT-3000M54E2	Yes	Yes	No	Yes	Yes	
IT-3000M55E	Yes	Yes	Yes	No	Yes	Note 2
IT-3000M55U	Yes	Yes	Yes	No	Yes	Note 3
IT-3000M56E	Yes	No	Yes	No	Yes	Note 2
IT-3000M56U	Yes	No	Yes	No	Yes	Note 3

Notes:

1. The intended regional destination is all overseas markets except Japan.

2. The intended regional destination is all overseas markets except Japan and North America including the USA and Canada.

3. The intended regional destination is North America including the USA and Canada.

Table 1.2   Options

Model no.	Product	Remark
HA-B61IO	Bridge Satellite Cradle	
HA-B34AT	Battery Charger Car Mount Unit	
HA-B30CHG	Cradle-type Battery Charger	
DT-9723LI	Battery Pack	Lithium-ion rechargeable battery
DT-9723LIC	Battery Pack	Four plastic sheets attached to DT-9723LI
AD-S42120AE	AC Adaptor	AC input 100V to 240V
DT-9020ADP-G	AC Adaptor	AC input 220V to 240V
DT-9020ADP-U	AC Adaptor	AC input 100V to 120V
DT-9721CHGE	Battery Charger	Single battery pack charger
DT-9650BCR	Pen Bar Code Reader	
DT-9656BCR	Touch Bar Code Reader	
DT-827CAC	Car Power Cable	
DT-887AXA	RS-232C Cross Cable	Cable length; 1.5 m, 9-pin male
DT-882RSC	RS-232C Cross Cable	25-pin male
DT-883RSC	RS-232C Cross Cable	25-pin female
DT-888RSC	RS-422 Modular Cable	Cable length; 1.0 m
DT-380USB	USB Cable	Cable length; 2.0 m
HA-B80AX	RS-232C Cross Cable	
HA-B93PH	Formed Sheet Paper Holder	
HA-B92PCV	Splash Protect Cover	
HA-B90DCV	Screen Protect Cover	

The accessories in the table below are accompanied as accessory in individual carton box of IT-3000 series.

Table 1.3   Accessory

Accessory	Q'ty	Remark
Stylus	1	
Neck strap and stylus holder	1	
Hand strap	1	
Battery pack	1	DT-9723LI or DT-9723LIC (See bulletin no. SB-PA-2004013.)
Roll paper	1	80 mm width
PC card fixers	3	One each of three different kinds
58 mm Paper Width Adjuster	1	"80mm Paper Width Adjuster" is mounted as standard in the terminal
PC Card remover	2	
User's Guide	1	In English and Chinese

1.2.1　Options And Interfaces


```
IT-3000
 ├── Serial I/F ──◇── Bar Code Readers
 │                    DT-9650BCR
 │                    DT-9656BCR
 │                    Cable
 │                    HA-B80AX
 │
 ├── 14-pin Serial I/F ──◇── Option Device
 │
 ├── IR Port          ⚡── IrDA Printer
 │   (IrDA 1.1)            （Recommended Option only）
 │                    ⚡── Bridge Satellite Cradle   USB/RS-232C   PC
 │                        HA-B61IO                   RS-422
 │                           │                                    RS-422 ── Bridge Satellite Cradle
 │                        AC Adaptor                                          HA-B61IO
 │                        AD-S42120A-E                                           │
 │                                                                            AC Adaptor
 ├── Power Supply Terminals ──◇── Cradle-type Battery Charger                  AD-S42120A-E
 │   （Built-in charger）          HA-B30CHG
 │                                    │
 │                                 AC Adaptor
 │                                 AD-S42120A-E
 │
 │                              Battery Charger Car Mount Unit
 │                              HA-B34AT
 │                                 │
 │                              Car Power Cable
 │                              DT-827CAC
 │
 ├── SD Card Slot ──◇── SD Card
 │                      (Recommended Option only)
 │
 ├── PCMCIA ──◇── PC Card
 │                (Recommended Option only)
 │
 ├── Power Jack ──◇── AC Adaptors            Battery Pack
 │                    DT-9020ADP-U           DT-9723LI or
 │                    DT-9020ADP-G           DT-9723LIC
 │                                              │
 │                                           Battery Charger
 └── Bluetooth Module ⚡── Bluetooth Device   DT-9721CHGE
     Ver1.1               (Recommended Device only)
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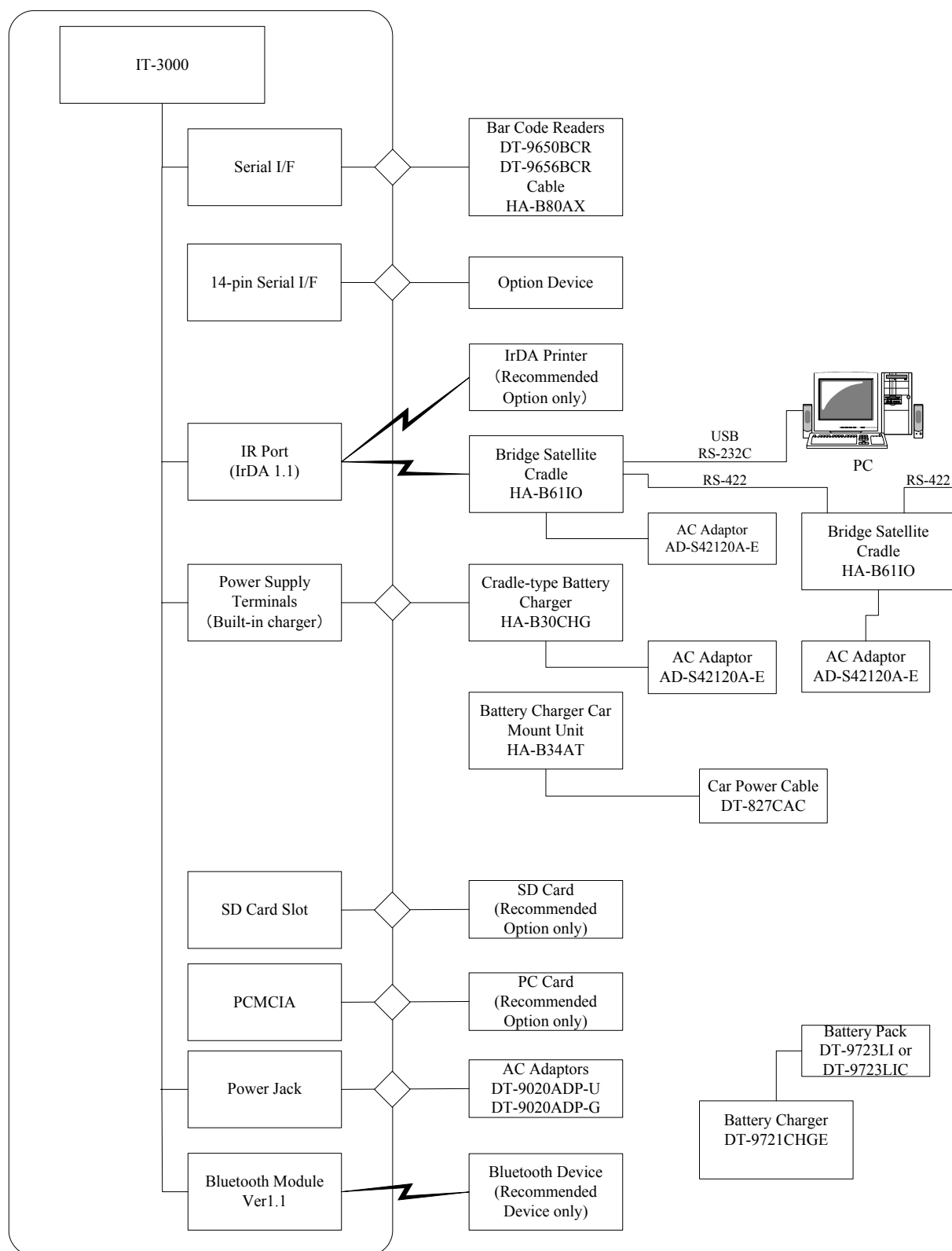
Fig. 1.1

1.3 General Guide

Views for IT-3000M53E

Fig. 1.2
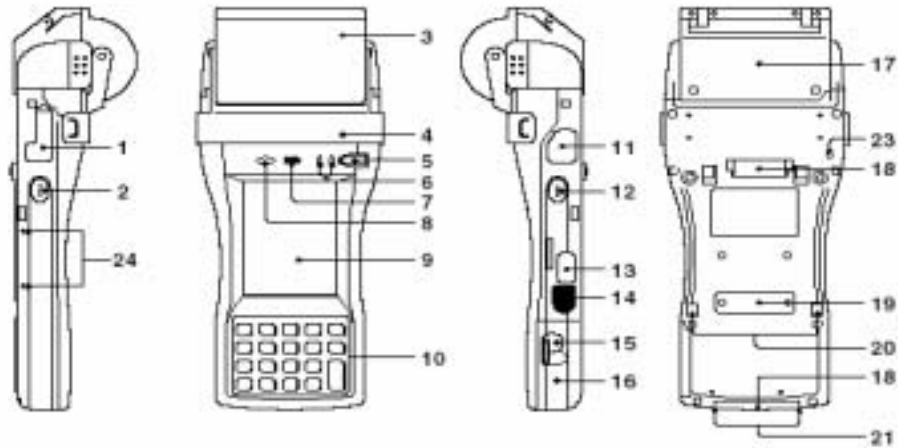
Views for IT-3000M54E2, IT-3000M55E, IT-3000M55U, IT-3000M56E, and IT-3000M56U
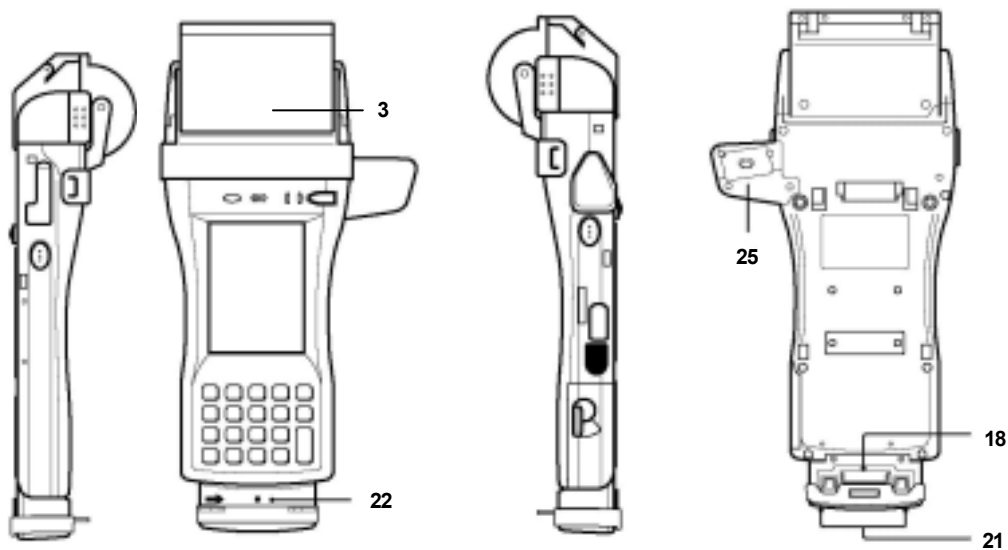

Fig. 1.3

Notes:

- The model "IT-3000M54E2" does not integrate the imager (item no. 25 in Fig. 1.3). Instead, it comes with another serial interface (8-pin).
- The models IT-3000M56E and IT-3000M56U do not integrate the MCR (item no. 22 in Fig. 1.3).

See Table 1.4 for names of each part and description.

Table 1.4   Descriptions of the parts

No.	Name	Description
1	SD Memory Card Slot	Slot for inserting SD memory card.
2	Program Key (L)	This key can be assigned any function available.
3	Roll Paper Holder	Roll paper is placed in this holder. Use the optional Paper Holder when using a formed sheet paper.
4	Splash Protect Cover and Paper Cutter	Printed roll paper is torn off here. The paper cutter is provided with a splash protect cover. Open the cover when printing. The paper cutter is revealed when the cover is opened.
5	Power Key	Press this key to turn the power on or off.
6	Indicator 1 (Left side)	This indicator is green when charging the battery pack is completed and red during charging.
	Indicator 2 (Right side)	This indicator flashes or lights according to the settings of the application software installed in the terminal.
7	Speaker	Generates audio and buzzer tones.
8	Brightness Sensor	This sensor detects the brightness of the surroundings. The display backlight and key backlight can be controlled automatically according to programmed settings. Be careful not to inadvertently block this sensor.
9	LCD Panel/Touch Screen	Displays text, operations, indicators and so forth. In addition, operations can be performed and data can be input using the stylus provided.
10	Stroke Keys	There are a total of 19 keys including function keys and numeric keys. Each numeral and symbol on the key buttons is backlit.
11	8-pin Serial Interface Connector	For connection of a bar code reader and so forth. Connect by opening the connector cover.
12	Program Key (R)	This key can be assigned any function available.
13	Power Jack	The AC adaptor is connected to this jack when charging the lithium-ion battery pack. Open the jack cover to connect the AC adaptor.
14	IR Port	This is used for IR data communication with another terminal or with the Bridge Satellite Cradle.
15	Battery Pack Cover Lock Switch	Turn this switch when opening and closing the battery pack cover.
16	Battery Pack Cover	Houses the battery pack inside.
17	PC Card Slot	For connection of a separately sold PC card. Remove the cover to install a PC card.
18	Hand Strap Hook	Hook the hand strap here.
19	14-pin Serial Interface Connector	Provided for future use.
20	Power Terminals	Terminals for supplying power from the Bridge Satellite Cradle and Cradle-type Battery Charger.
21	Neck Strap Hooks	Hook the neck strap here.
22	Magnetic Card Reader	Magnetic cards are read by passing through this magnetic card reader. Remove the cover to use.
23	Reset Switch	Press to reset the terminal. Be careful not to press by mistake.
24	Screen Protect Cover Mounting	Remove the screws when attaching the Screen Protect Cover.
25	C-MOS Imager	Reads 1D bar code symbologies and stacked 2D code symbologies. (available on IT-3000M55E, IT-3000M55U, IT-3000M56U, and IT-3000M56E only)

1.3.1   HA-B34AT (Battery Charger Car Mount Unit)

External View

1. Power Terminal

2. Power Indicator Lamp

3. Terminal Detect Switch

4. Jack for Car Power Cable

1. Power Terminal

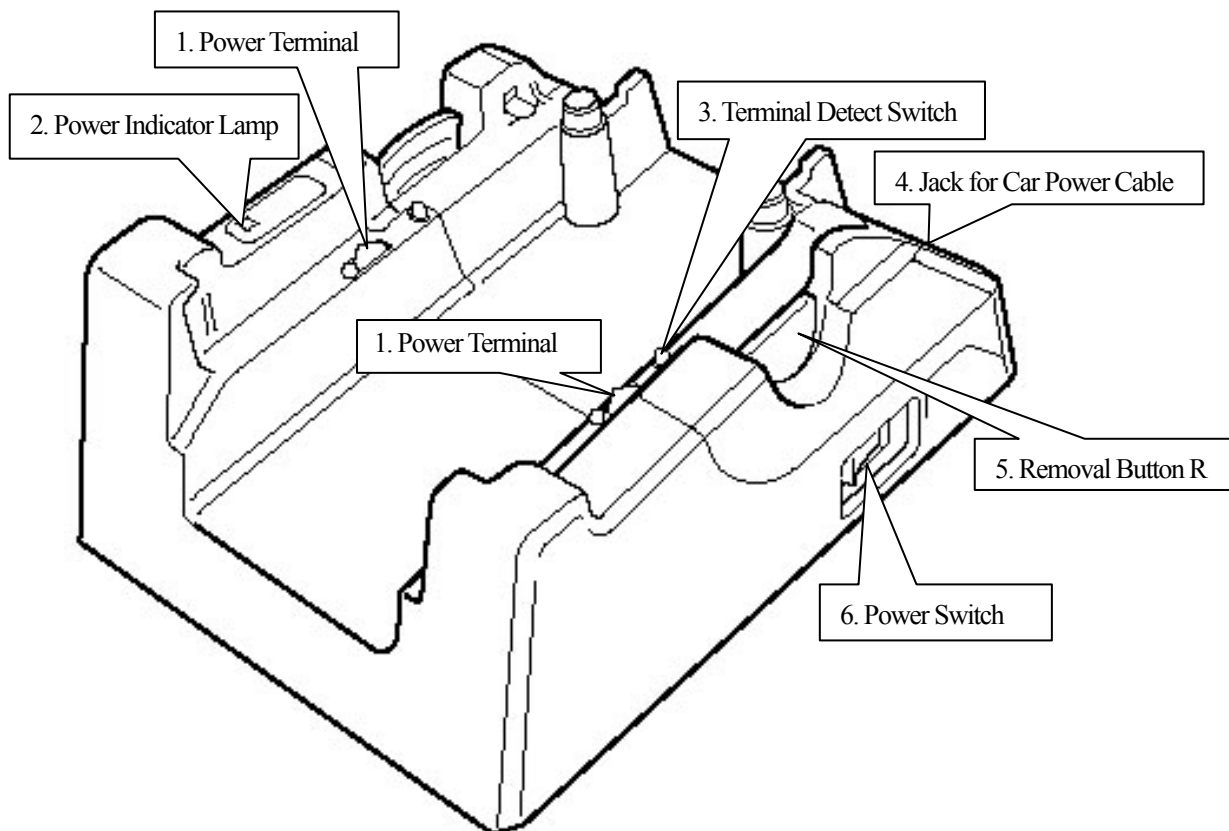5. Removal Button R

6. Power Switch

Fig. 1.4

The figure above shows a view of HA-B34AT (Battery Charger Car Mount Unit) and HA-B30CHG (Cradle-type Battery Charger) being assembled together.

Table 1.5   Names of parts and the descriptions

No.	Part Name	Description
1	Power Terminals	Power is supplied to the mounted terminal via these contacts.
2	Power Indicator Lamp	This lamp indicates the power status and mounting status of the terminal. Off : Power off. Green : Power on and charging the battery pack in the terminal is in progress. Red : Power on.
3	Terminal Detect Switches	These switches detect when the terminal is mounted correctly on the Battery Charger Car Mount Unit.
4	Jack for Car Power Cable	Connect the dedicated Car Power Cable from the cigarette lighter in a vehicle.
5	Removal Buttons R and L	When remove the terminal, press the removal buttons on the left and right sides of the Car Mounted Battery Charger.
6	Power Switch	Turns the power on and off.

1.3.2 HA-B61IO (Bridge Satellite Cradle)

Views

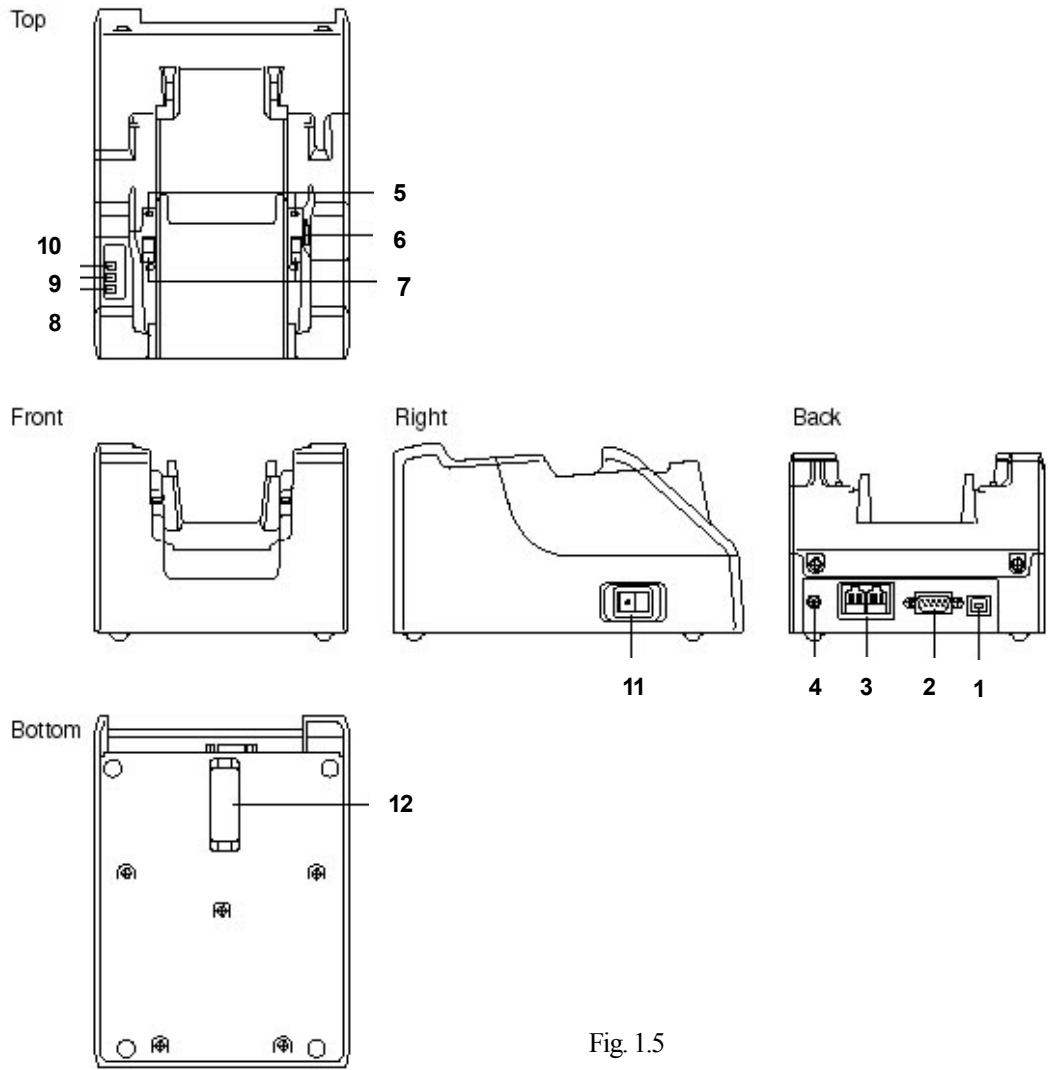Fig. 1.5

See Table 1.6 for names of each part and its description.

Table 1.6   Names of parts and the descriptions

No.	Part Name	Description
1	USB Port	This port accepts connection of a USB cable for connection to PC for transfer of data and file. Use of the USB port requires installation of special driver on the PC.
2	RS-232C Port	This port accepts connection of an RS-232C cable for connection to PC for transfer of data and file. Use of the RS-232C port requires installation of special driver on the PC.
3	RS-422 Port	This port is used when connecting to another Bridge Satellite Cradle.
4	AC Adaptor Jack	Connect the dedicated AC adaptor here to supply power.
5	Terminal Detect Switches	These switches detect when the terminal is mounted correctly on the Bridge Satellite Cradle.
6	IR Port	This port transfers data with the terminal's IR port by non-contact data communication.
7	Power Contacts	Power is supplied to the terminal via these contacts.
8	Power Indicator Lamp	This lamp indicates the power status and mounting status of the terminal. Off : Power off. Green : Power on and data communication is in progress. Red : Power on, but the terminal is not mounted.
9	Communication Indicator Lamp	This lamp shows when the terminal is performing data communication. Off : No data communication being performed. Green flashing : Data communication in progress. Red : Problem with connection between Bridge Satellite and the terminal.
10	System Status Indicator Lamp	This lamp indicates whether the system is operating normally. It indicates the system status and whether or not communication with the system can be performed regardless of whether or not the terminal is mounted. Off : System is not operating. Green : System is operating.
11	Power Key	Turns the power on and off.
12	DIP Switches	Use these switches to configure the Bridge Satellite Cradle as required.

1.3.3   HA-B30CHG (Cradle-type Battery Charger)

Views

Rear

Top   Right   Bottom

Front
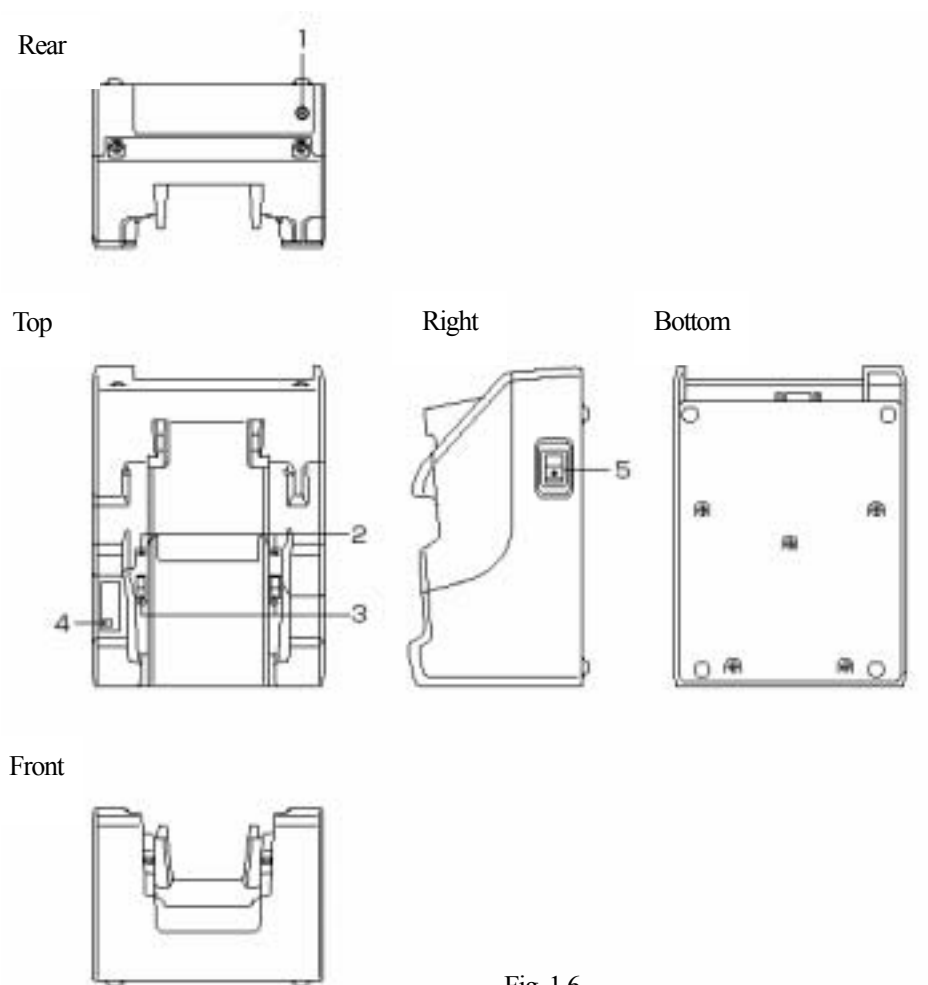
Fig. 1.6

Table 1.7   Names of parts and the descriptions

No.	Part Name	Description
1	Power Jack	Power jack to connect the dedicated AC adaptor for supplying the power.
2	Detection Switches	These switches are to detect the terminal being mounted on the charger.
3	Power Supply Terminals	These terminals are to provide the power to the terminal on the charger.
4	Power Status Indicator	This LED indicates the power status.
5	Power Switch	Turns on or off the power.

1.3.4   DT-9721CHGE (Battery Charger)

Views

Fig. 1.7

Note:

The above views show the DT-9721CHGE with a power cord available only in Japan. The power cord accompanied with the charger for overseas destinations is not the same.

2. Hardware Specifications

2.1   IT-3000

Specifications
Table 2.1

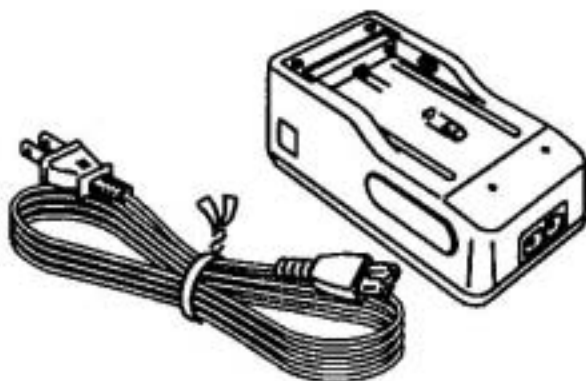| Item		Specification	Remark
CPU, Memory			
	CPU	Intel PXA255 400MHz (maximum)	
	Operating system	Microsoft© Windows© CE .NET Ver. 4.1	
	RAM	64 MB	
	FROM (system)	64 MB	
	FROM (user)	32 MB (user area: approx. 30 MB)	
Display			
	Device	3.5-inch 2-way TFT color LCD	
	Resolution	240 x 320 dots	
	Backlight	LED	Automatic control via brightness sensor
	Dot pitch	0.22 mm (horizontal) x 0.22 mm (vertical)	
	Font	Scalable fonts	
Indicator			
	LED	2 pcs x LED in red and green	
Input			
	Keyboard	Ten keys (0 to 9), ENT, CLR, Fn, BS	
	Control key	Power key, Reset switch	
	Programmable key	2 (on the left and right sides)	
	Touch panel	Plastic panel	
Key backlight		Available	Automatic control with the illumination sensor (Programmable)
Illumination sensor		Available	Used to control both display backlight and key backlight.
Printer			
	Method	Thermal line dot	
	Paper width	80 mm or 58 mm	The width of paper must be preset with software prior to use of the printer. In order to use 58mm paper, "58mmWidth Adjuster" must be installed first.
	Printing width	72 mm(for 80 mm paper), 48 mm (for 58 mm paper)	
	Speed	28 lines per second (Max.)	See note 1.
	Paper	Roll paper, formed papers (1-ply/2-ply), label paper	Use only CASIO recommended papers.
	Font size	"x1", "x1.5", "x2", "x3" and "x4" sizes are supported.	
	Font types	ANK, Symbologies (UPC-E, NW-7, Code39, ITF, Code128, OCR-B, user-defined characters x 128)	
	Sensor	Positioning for printing	
	Print function	In white, black and reverse modes. Mixture of different font sizes.	

IrDA			
	Standard	IrDA Version 1.1	The module is installed on the right side.
	Method	Half-duplex	
	Synchronization	Start/stop, frame synchronization	
	Baud rate	9600, 115200, 4 Mbps	
	Comm. range	0 (contact) to 1 m (0.25 m for 4 Mbps)	
Bluetooth			
	Standard	Bluetooth™ specification Ver. 1.1	
	Comm. range	Approx. 5 m	See note 2.
	Output power	Max. 3 dBm (PowerClass2)	
8-pin serial interface			
	Interface	RS-232C level interface	See note 3.
	Synchronization	Start/stop synchronization	
	Baud rate	300, 600, 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K	
	Output power to external	5.0 V±10%, Max. 300 mA	
	Connector	TSC7926-18-30 manufactured by Hosiden Corporation	
	Pin layout	See Table 2.2.	
	Pin configuration table	See Table 2.2.	
14-pin serial interface			
	Interface	RS-232C level interface	See note 4.
	Synchronization	Start/stop synchronization	
	Baud rate	300, 600, 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K	
	Output power to external	5.0 V±10%, Max. 300 mA	
	Connector	A3A-14DA-2SV manufactured by Hirose Electric Co., Ltd.	
	Pin layout	See Table 2.3.	
	Pin configuration table	See Table 2.3.	

Continue.

Notes

1. The printing speed has been measured under the following conditions;
    -   Printing Kanji with 16-dot character, and space is not allowed between lines.
    -   One pry roll paper is used.
    -   The battery pack is fully charged before printing.
2. The comm. range can be varied depending on the surrounding environment.
3. IT-3000M55E, IT-3000M55U, IT-3000M56E, and IT-3000M56U do not integrate the serial interface.
4. A partner device connected to this interface must output data in the RS-232C signal level when communicating with the terminal.

Table 2.2　8-pin serial interface pin configuration/pin layout

Pin	Signal	Direction	Remark
1	SD	OUT	
2	RD	IN	
3	RS	OUT	
4	CS	IN	
5	Vcc	OUT	5V±10%/Max300mA
6	SG	―	GND for signal and ground
7	ER	OUT	
8	DR	IN	
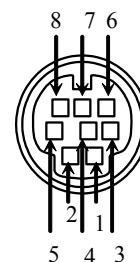
Table 2.3   14-pin serial interface pin configuration/pin layout

Pin	Signal	Direction	Remark
1	SG	—	GND for signal and ground.
2	CS	IN	
3	SG	—	GND for signal and ground
4	CI	IN	
5	NC	—	
6	DR	IN	
7	SD	OUT	
8	CD	IN	
9	RD	IN	
10	EXTSW	OUT	Output "L" when VH is ON. （Open drain output)
11	RS	IN	
12	VH	OUT	5V±10%/MAX300mA
13	ER	OUT	
14	VH	OUT	5V±10%/MAX300mA
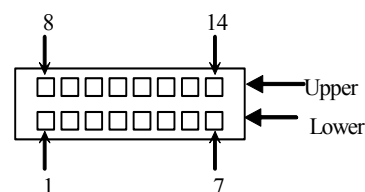
SD slot			
	SD memory card	1 slot	
PC card slot			
	Type	PC card Type I/II (3.3V/5.0V)	
	Power	Max. 500 mA at 3.3V	
		Max. 1,000 mA at 5.0V	
Magnetic card reader			
	Standard	ISO Tracks 1, 2, 3 (ISO/IEC 7811-2 2001)	Applicable to IT-3000M54E2, M55E, and M55U.
	No. of tracks for concurrent read-in	3	
	Sides of data reading	Both	
	Orientation	One direction (left to right with the front side being faced to the operator)	
	Card running speed	10 to 150 cm per second	
Speaker			
	Alarm sound	70 dB or greater	
	Voice sound	60 dB or greater	
	Key click sound	50 dB or greater	
Power			
	Operating battery	Lithium-ion battery x 1	7.4 V 2,200 mAH
	Memory backup battery	Lithium rechargeable battery x 1	Built-in, unchangeable
	Battery life	Approx. 15 hours	JEITA operation mode A Note1
		Approx. 12.6 hours	JEITA operation mode D Note 1
	Memory backup	RAM	10 minutes while replacing the operating battery.	Note 2
			1.5 days when operating battery low warning appears.	Note 3
		RTC	14 days	

Continue.

Charging the operating battery			
	Ways to charge the battery pack	Use AC Adaptor (DT-9020ADP) while the battery pack is being installed in the terminal.	
		Use the Cradle-type battery charger while the battery pack is being installed in the terminal.	
	Charge method	Constant current and constant voltage	
	Charge voltage	8.4 V±1%	
	Charge current	Approx. 400 mA	
	Charge time	Approx. 8 hours (for DT-9723LI/DT-9723LIC)	Note 4
		Approx. 72 hours (Memory backup)	Note 5
	Charge indication	During charging : LED ON in red	
		After charging : LED ON in green	
C-MOS Imager			
	Method	300,000 pixels, monochrome	
	Emitting window	Redirected downward at 45 degree	
	Resolution	1D: 0.15 mm	
		Stacked 2D: 0.169 mm	
		Matrix 2D: 0.339 mm	
	PCS	1D: 0.45 or greater	
		Stacked 2D: 0.45 or greater	
		Matrix 2D: 0.45 or greater	
	Depth	1D: 40 to 410 mm	
		Stacked 2D: 50 to 250 mm	
		Matrix 2D: 60 to 150 mm	
	Readable width	See Chapter 2.1.2 on page 23.	
	Readable symbology	Refer to IT-3000 Series Software Manual.	

Notes:

1. When the battery pack is a brand-new charged fully, and the surrounding temperature is in ordinary level.
2. When the memory backup battery is a brand-new, and the surrounding temperature is in ordinary level.
3. When the memory content is retained by the remaining battery capacity after the operating battery low warning message appears. The battery pack is being installed in the terminal.
4. When the terminal's power is turned off. The battery pack is a brand-new, and the surrounding temperature is in ordinary level.
5. Until when the memory backup battery becomes fully charged. The operating battery is being installed in the terminal, and the surrounding temperature is in ordinary level.

Weight/Dimensions

Table 2.4

Model no.	Dimensions		Weight
IT-3000M53E	Approx. 80 (w) x 199.5 (d) x 28 (h) mm (Note 1)		Approx. 530 g (Note 3)
	Approx. 108 (w) x 265 (d) x 68 (h) mm (Note 2)		Approx. 635 g (Note 4)
IT-3000M54E2	Approx. 80 (w) x 229.5 (d) x 28 (h) mm (Note 1)		Approx. 580 g (Note 3)
	Approx. 108 (w) x 295 (d) x 68 (h) mm (Note 2)		Approx. 680 g (Note 4)
IT-3000M55E, M55U	Approx. 80 (w) x 229.5 (d) x 28 (h) mm (Note 1)		Approx. 600 g (Note 3)
	Approx. 145 (w) x 295 (d) x 70 (h) mm (Note 2)		Approx. 700 g (Note 4)
IT-3000M56E, M56U	Approx. 80 (w) x 199.5 (d) x 28 (h) mm (Note 1)		Approx. 550 g (Note 3)
	Approx. 145 (w) x 265 (d) x 70 (h) mm (Note 2)		Approx. 655 g (Note 4)

Notes:

1. The paper holder and other extruding parts on the terminal are excluded.
2. The paper holder and other extruding parts on the terminal are included.
3. The paper holder and hand strap are excluded. The lithium-ion battery pack is installed in the terminal.
4. The paper holder and lithium-ion battery pack installed are included. The hand strap is excluded.

2.1.1　Reference For C-MOS Imager Performance

Reference of the C-MOS imager performances below is provided as a guide to be utilized by the user. The user can refer to these reference values in the table for his or her specific business application. All the reference values have been came out from the assessment tests carried out under the basic performance conditions below. However, it does not necessarily imply that the values are guaranteed and optimum to any kind of business applications. They are intended for use by the user as a reference only.

Table 2.4

1D/2D	Symbology	Resolution	Range (mm)	No. of read digits			Remark
				A: Maximum (close)	B: Recommended	C: Maximum	
1D	Code39	6 mil (0.15 mm)	70 to 195	12	12	21	
		8 mil (0.20 mm)	60 to 135	5	12	22	
		10 mil (0.254 mm)	50 to 165	5	10	20	
		13 mil (0.33 mm)	60 to 200	5	10	19	
		15 mil (0.38 mm)	40 to 210	2	8	17	
		20 mil (0.5 mm)	70 to 260	2	8	16	
		40 mil (1.0 mm)	90 to 410	2	5	12	
	UPC	13 mil (0.33 mm)	60 to 200	11	11	11	
2D (Stacked)	PDF417	6.6 mil (0.168 mm)	60 to 115	97	100	2000	ECL4
		8 mil (0.20 mm)	60 to 135	95	100	2000	ECL4
		10 mil (0.254 mm)	50 to 165	100	100	2000	ECL4
		15 mil (0.38 mm)	70 to 210	52	50	1800	ECL4
		20 mil (0.5 mm)	80 to 250	50	50	1500	ECL4
2D (Matrix)	DataMatrix	13 mil (0.33 mm)	60 to 105	100	100	1152	ECC200
		15 mil (0.38 mm)	60 to 125	97	100	1152	Max. 88
		20 mil (0.5 mm)	80 to 155	95	100	1152	x 88 cel.
	QR	13 mil (0.33 mm)	60 to 105	100	100	1600	Max.
		15 mil (0.38 mm)	60 to 130	97	100	1600	model 2
		20 mil (0.5 mm)	60 to 145	95	100	1600	M version 20
	Maxicode	35 mil (0.889 mm)	50 to 210	52	50	138	ECC

Angle					
Pitch	1D (Code39 10 mil (0.25 mm))	±35°	At 110 mm from the LED emission port.		
	2D Stacked (PDF417 10 mil (0.25 mm))	±35°	At 110 mm from the LED emission port.		
	2D Matrix (Aztec 20 mil (0.5 mm))	±35°	At 110 mm from the LED emission port.		
Skew	1D (Code39　10 mil (0.25mm))	±40°	At 110 mm from the LED emission port.		
	2D Stacked (PDF417 10 mil (0.25 mm))	±40°	At 110 mm from the LED emission port.		
	2D Matrix (Aztec 20 mil (0.5 mm))	±35°	At 110 mm from the LED emission port.		
Dead zone	Pitch/Skew	±5°(Pitch, Skew)	At 110 mm from the LED emission port.		
Tilt	1D (Code39 10 mil (0.25 mm))	360°	At 110 mm from the LED emission port.		
	2D Stacked (PDF417 10 mil (0.25 mm))	360°	At 110 mm from the LED emission port.		
	2D Matrix (Aztec 20 mil (0.5 mm))	360°	At 110 mm from the LED emission port.		

PCS				
	1D (Code39 10 mil (0.25 mm))	0.45 or greater	5	
	2D Stacked (PDF417 10 mil (0.25 mm))	0.45 or greater	100	
	2D Matrix (MaxiCode 35 mil (0.889 mm))	0.45 or greater	52	

Surrounding illumination	
100 to 80,000 Lux.	

Visible angle	
V_Angle = 26°　　H_Angle = 35°	

Operating temperature (Image sensor)	
High temperature　50°C	
Low temperature　-10°C	

Basic read conditions:

Test chart : Dedicated test pattern (1D, 2D Stacked)
Resolution : 1D 0.25 mm / 2D 0.5 mm
PCS : 0.9 or greater
Depth : 110 mm from the LED emission port
Pitch angle : $\alpha = 0$ degree
Skew angle : $\beta = 10$ degree
Tilt angle : $\gamma = 0$ degree
Surrounding temperature : 25 ℃
Surrounding humidity : 30 to 50%
Surrounding illumination : 450 to 550 Lux.
Background of the symbol : White
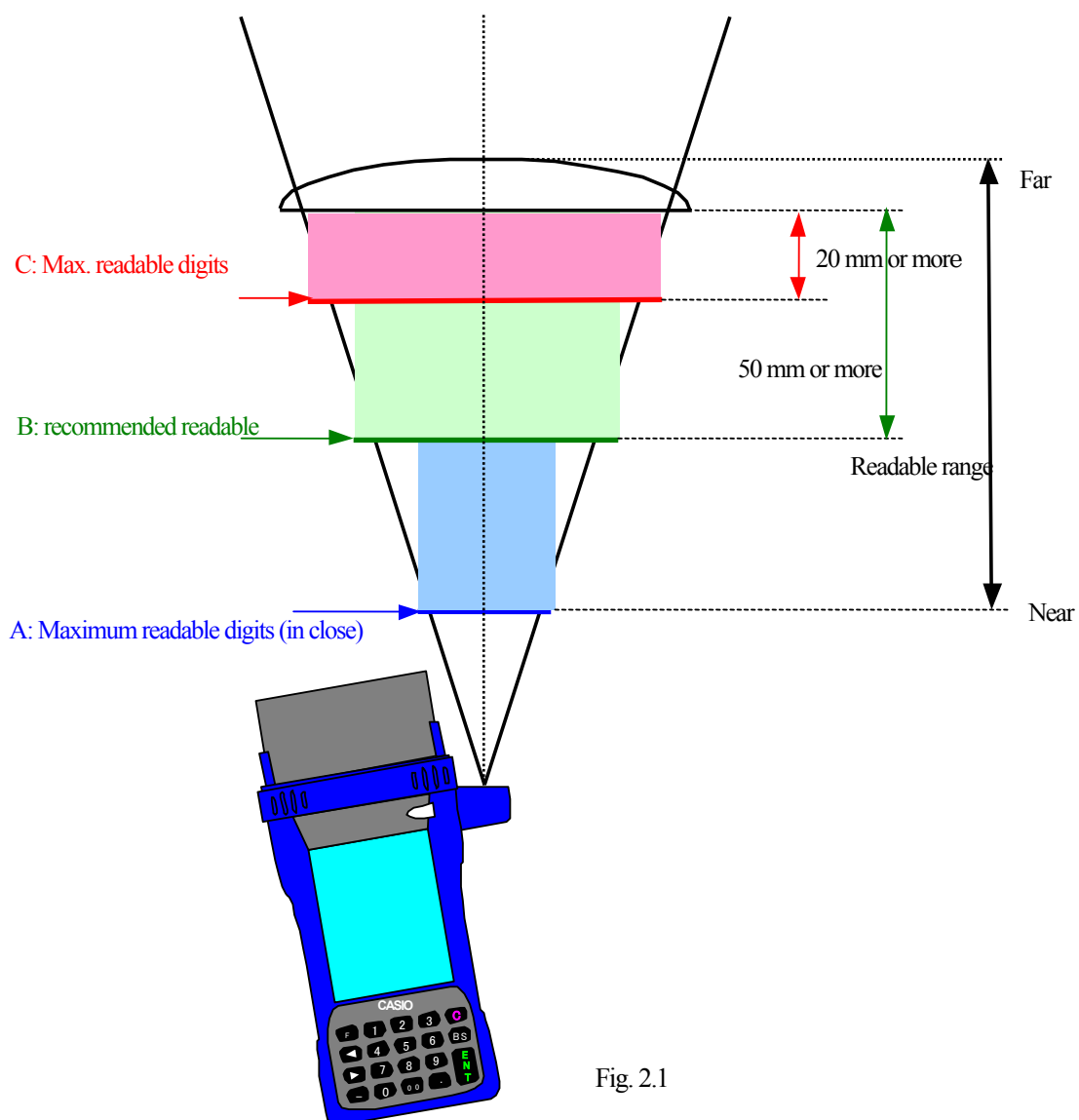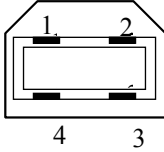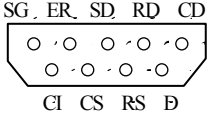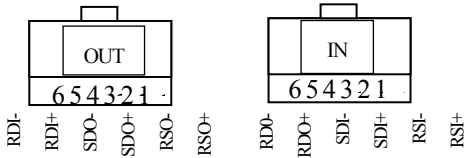Conditional Judgment : Readable 7 times or more per 10 scanning

C: Max. readable digits

20 mm or more

50 mm or more

B: recommended readable

Readable range

A: Maximum readable digits (in close)

Far

Near

CASIO

Fig. 2.1
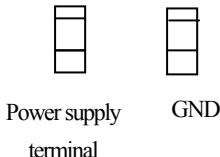
2.2   HA-B61IO (Bridge Satellite Cradle)

Specifications

Table. 2.5

Item			Specification	Remark
Interface	IrDA	Standard	IrDA Ver. 1.1 compatible	
		Comm. method	Half duplex	
		Synchronization	Start/stop method, Frame synchronization	
		Comm. speed	9600, 115.2 Kbps, 4 Mbps (maximum)	Note 1
	USB	Standard	USB Ver. 1.1 compatible	
		Comm. speed	12 Mbps (maximum)	
		Connector	USB connector type B	1. VBus 2. –Data (D-) 3. +Data (D+) 4. GND
	RS-232C	Comm. method	Full duplex	
		Synchronization	Start/stop method	
		Comm. speed	115.2 Kbps	
		Connector	D-Sub 9-pin (Male)	
	RS-422	Comm. method	Full duplex	
		Synchronization	Start/stop method	
		Comm. speed	115.2 Kbps	
		Connector	RJ-45 compatible (6 pins)	
Display	Status LED	No. of LEDs	3	
		No. of display colors	2	Red, green
		Display content	System operation status ("LINE") Comm. status ("DATA") Power status ("POWER")	Refer to Chapter 2.7 "Status Indication With LEDs".
Input	DIP switch		8 switches	See page 26.
	Detection switch for the terminal		Push switch	
Power	Input from AC adaptor	Input voltage	DC 12V±5%	
		Consumption current	Approx. 2,200 mA	While supplying power and transmitting data.
		Plug	EIAJ RC-5320A Class 4	Center pin: plus
		AC adaptor	AD-S42120AE	

Continue.

Power	Charge/supply power	Output voltage	DC 10V±5%	
		Output current	1,800 mA (maximum)	
		Charge method	Constant voltage	With the current limiter.
		Charge time	Approx. 8.0 hours	For DT-9723LI/DT-9723LIC
		Power supply terminal	Power supply terminal GND	Note 2

Notes:

1. The maximum communication speed at 4 Mbps is possible only when the terminal is connected to Host PC via the USB interface.
2. "Power supply terminal" is located on your left side when you face to the front side of the Cradle with the power switch being located on your right side.
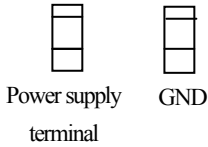
Weight/Dimensions

Table 2.6

Specification		Remark
Weight	Approx. 660 g	
Dimensions	Approx. 130 (W) x 206 (D) x 104 (H) mm	

2.3   HA-B30CHG (Cradle-type Battery Charger)

Specifications

Table 2.7

Item			Specification	Remark
Display	Status LED	No. of LEDs	1	
		No. of display colors	2	In red and green
		Display content	Power status ("POWER")	
Input	Detection switch for the terminal		Push switch	
Power	Input from AC adaptor	Input voltage	DC 12V±5%	
		Consumption current	Approx. 2,100 mA	While supplying power and transmitting data.
		Plug	EIAJ RC-5320A Class 4	Center pin: plus
		AC adaptor	AD-S42120AE	
	Input from cigarette lighter	Cable	DT-827CAC	Note 1
	Charge/Power supply	Output voltage	DC10V±10%	
		Output current	1,800 mA (maximum)	
		Charge method	Constant voltage	With the current limiter
		Charge time	Approx. 8.0 hours	For DT-9723LI/DT-9723LIC
		Power supply terminal	Power supply terminal GND	Note 2

Notes

1. The cable DT-827CAC is used to supply the power to HA-B30CHG from the cigarette lighter installed in a vehicle.
2. "Power supply terminal" is located on your left side of the charger when you face to the front side with the power switch being located on your right side.

Weight/Dimensions

Table 2.8

	Specification	Remark
Weight	Approx. 630 g	
Dimensions	Approx. 130 (W) x 206 (D) x 104 (H) mm	

2.4   DT-9721CHGE (Battery Charger)

Specifications

Table 2.9

Item	Specification	Remark
Charge method	Fixed voltage-and-current	With the current limiter
Charge period	Approximately 3 hours until the LED goes out	Note
Consumption power	18 W	
Input	39 VA (at AC240V)	

Note:

When the LED goes out, charging the battery is complete nearly 90 percent from its fully charged level. Leave the battery pack on the charger for another one hour after the LED went out to make the battery pack be fully charged.

Weight/Dimensions

Table 2.10

	Specification	Remark
Weight	Approx. 140 g	
Dimensions	Approx. 56 (W) x 44 (H) x 107 (D) mm	

2.5   DT-9723LI/DT-9723LIC (Battery Packs)

Both the battery packs are similar to each other as far as the electric specifications are concerned. However, four plastic sheets are attached on the DT-9723LIC for the countermeasure described in the sales bulletin no. SB-PA-2004013.

Specifications

Table 2.11

Item	Specification	Remark
Rated capacity	2,200 mAh	Discharge at the rate of 0.2C, Discharge cut-off voltage at 5.0V
Rated output voltage	7.4 V	

Weight/Dimensions

Table 2.12

	Specification	Remark
Weight	Approx. 110 g	
Dimensions	Approx. 39 (W) x 21 (H) x 71 (D) mm	

2.6 DIP Switch Setting (For HA-B61IO)

The DIP switch is located on the rear side of the Bridge Satellite Cradle. Change the ON/OFF settings according to your required system configuration. The new settings do not go into effect until the power switch is turned off and then back on again.

Fig. 2.2

Not used (Always off)

Not used (Always off)

Host Computer Interface

Setting	6	
RS-232C	OFF	
USB	ON	*

Daisy Chain

Setting	5	
Intermediate Unit	OFF	
Daisy Chain Disabled/Termination	ON	*

Connection Type

Setting	3	4	
Host Computer	OFF	OFF	*
Daisy Chain	ON	OFF	

Bridge Satellite Cradle Data Rate

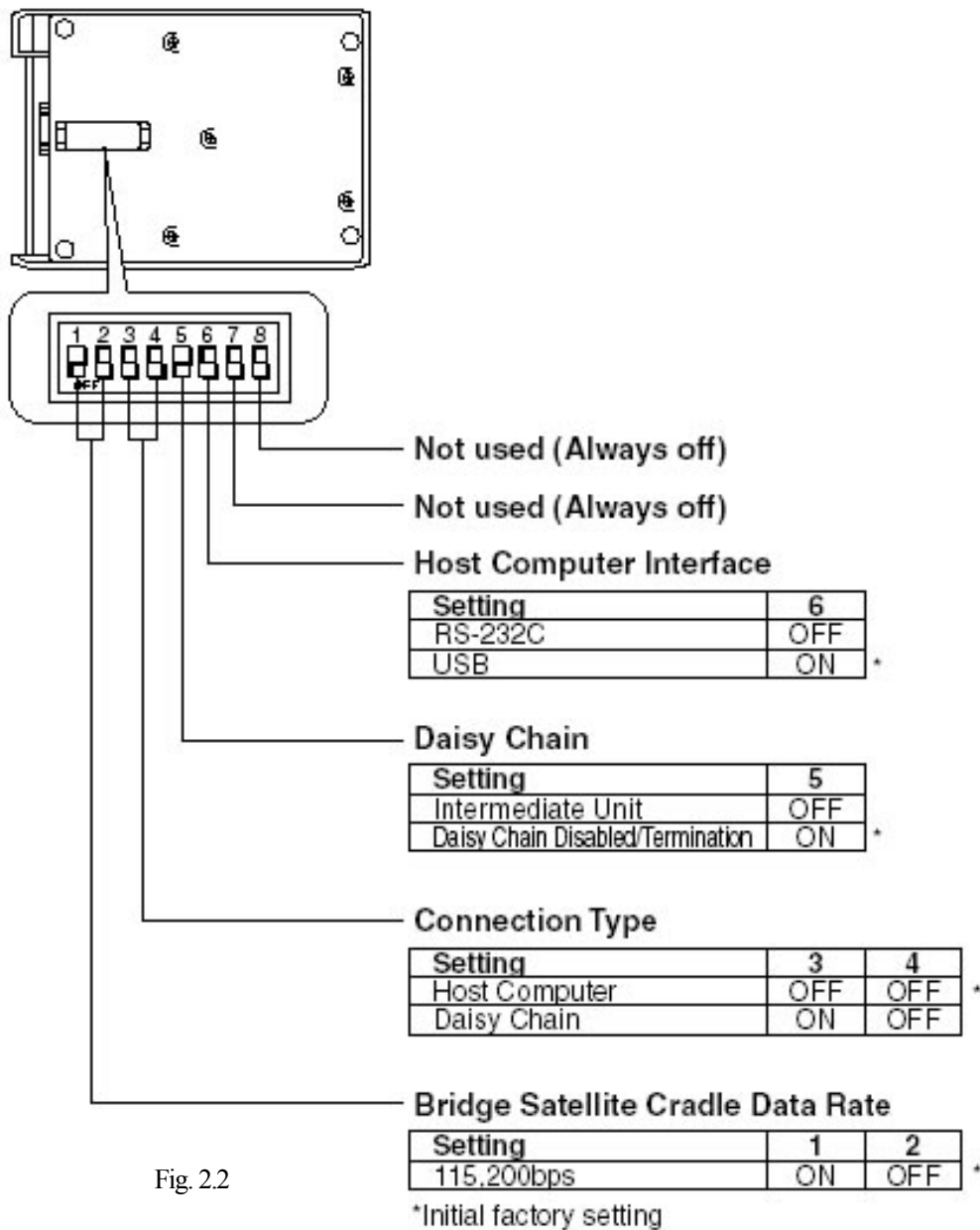| Setting	1	2	
115,200bps	ON	OFF	*

*Initial factory setting

Note:
Other DIP switch settings are used for testing and inspection purposes Because of this, you should never use any DIP settings other than those described above.

2.7   Status Indication With LEDs

2.7.1   HA-B61IO

Various operational statuses on the HA-B61IO can be displayed using the LEDs. The following table describes LED modes and their meanings.

Table 2.13

Item		Specification	Remark
LED			
Power status indicator (POWER)	IT-3000 is not mounted	LED ON in red	2-color LED
	IT-3000 is mounted	LED ON in green	
	Power OFF	LED OFF	
Comm. status indicator (DATA)	Break of communication	LED OFF	2-color LED
	Communication is in progress	LED flash in green	
	Connection between cradle and PC is not valid.	LED ON in red	
Line status indicator (LINE)	No comm. with IT-3000 or abnormality of the system	LED OFF	
	Communication is in progress with IT-3000.	LED ON in green	

2.7.2   DT-9721CHGE

Table 2.14

Item		Specification	Remark
LED			
Power status indicator (POWER)	The power to the charger is not supplied.	LED OFF	
	The power to the charge is supplied normally.	LED ON in green	
Charge status indicator (DATA)	Charging the battery is completed	LED OFF	
	Charging the battery started.	LED ON in orange	

3. Product Identification And Reference Numbers

On the back of the terminal and its options (major options only), there is a bar code and numbers printed on label as shown in Fig. 3.1 below.
This bar code is represented by 15 digits of Code128 symbology and by alphanumeric characters beneath the bar code. The numbers 1 to 9 in the figure represent identification and references of the terminal while the numbers 10 to 14 represent a manufacturing reference reserved by the manufacturer. See the figure below for respective meanings.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Serial number of the terminal in 5 digits

Manufacturing references (reserved by the manufacturer)

Check digit

Production month of the year (1 to 9, A, B, C)

Production year (last digit only. Ex. 1 represents the year 2001.)

Model number (two digits in alphanumeric)

        75: HA-B61IO
        76: HA-B30CHG
        77: DT-9700M33 (Domestic version)
        78: DT-9700M33ASK (Domestic version)
        79: IT-3000M53E
        91: IT-3000M54E2
        92: IT-3000M55E
        93: IT-3000M55U
        7B: IT-3000M56E
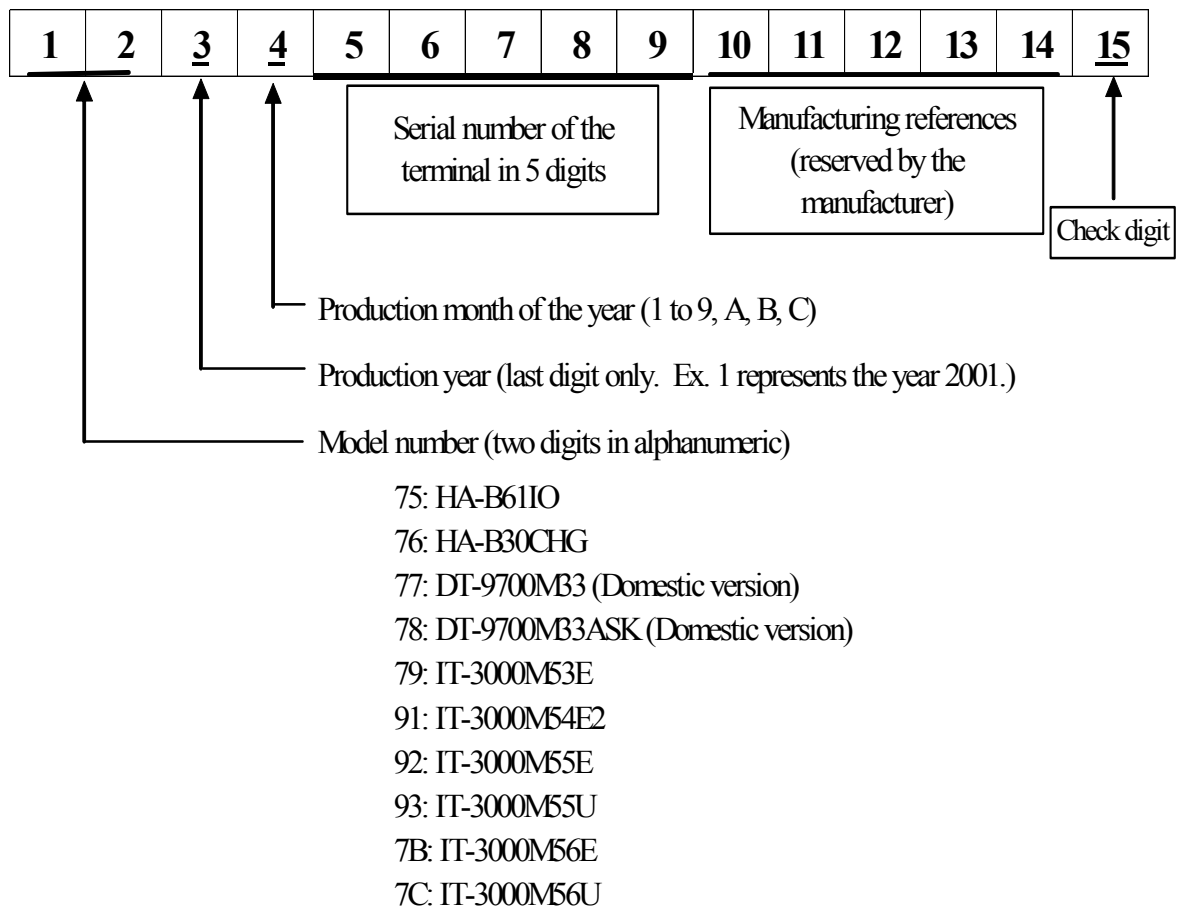   7C: IT-3000M56U

Fig.3.1

4. Quality References

This chapter describes about references of the terminal and its dedicated major options concerned with environmental performance, compliance, mechanical and electric durability, etc.

4.1 Environmental Performances

4.1.1 IT-3000

Table 4.1

Item		Specification	Condition
Temperature			
	Operation	-20℃ to 50℃	0 to 40℃ while mounting on Cradle. Note 1
	For quality print	0℃ to 50℃	HS360, ODT70TC-RAK, F200UW6, AFP235
		5℃ to 35℃	HG56S, TLC00
	Non-operation	-20℃ to 70℃	
Humidity			
	Operation	10 % to 80 %RH	No condensation
	Non-operation	5% to 90 %RH	No condensation
Storage in carton box			
	Temperature	-20 ℃ to 60℃	
	Humidity	90 %RH or less	
Dust and water-splash proof			
		IP54 level (compliant with IEC60529) See "IP (Industrial Protection) code".	Notes 2 and 3

Notes:
1. It is recommended to check the print quality in the environment including at low temperature where the terminal is operated before starting the use.
2. IP (Industrial Protection) code
   A cording system to indicate the degrees of protection provided by an enclosure against access to hazardous parts, ingress of solid foreign objects, ingress of water and to give additional protection in connection with such protection. Elements of the IP54 level and their meanings are as follows.
   IP5x;
   Represents dust proof to level 5. This level of IP code means that the terminal is protected against solid foreign objects including dust to penetrate the enclosure.
   IPx4;
   Represents water-splash proof to level 4. No detrimental effect is observed even with exposure to water splashed from any direction.
3. All covers on the terminal must be closed.

4.1.2   HA-B61IO/HA-B30CHG

Table 4.2

Item		Specification	Condition
Temperature			
	Operation	0℃ to 40℃	
	Storage	-10℃ to 50℃	
Humidity			
	Operation	30% to 80%RH (No condensation)	
	Storage	30% to 90%RH (No condensation)	
Storage in carton box			
	Temperature	-10℃ to 50℃	
	Humidity	30% to 90%RH	
Water-splash resistance			
		Not applicable.	

4.1.3   DT-9721CHGE

Table 4.3

Item		Specification	Condition
Temperature			
	Operation	0℃ to 40℃	
	Storage	-10℃ to 50℃	
Humidity			
	Operation	30% to 80%RH (No condensation)	
	Storage	30% to 90%RH (No condensation)	
Storage in carton box			
	Temperature	-10℃ to 50℃	
	Humidity	90%RH or less	
Water-splash resistance			
		Not applicable.	

4.1.4　DT-9723LI/DT-9723LIC

Table 4.4

Item		Specification	Condition
Temperature			
	Operation	Compatible with the temperature range for IT-3000 during discharge, or for the battery chargers during charge. See Table 4.1 for discharge. Or, Table 4.2 or 4.3 for charge.	
	Storage	Compatible with the temperature range for IT-3000. See Table 4.1.	
Humidity			
	Operation	Compatible with the humidity range for IT-3000 during discharge, or for the battery chargers during charge. See Table 4.1 for discharge. Or, Table 4.2 or 4.3 for charge.	
	Storage	Compatible with the humidity range for IT-3000. See Table 4.1.	
Storage in carton box			
	Temperature	-10℃ to 50℃	
	Humidity	90 %RH or less	
Water-splash resistance			
		Not applicable.	

4.1.5　HA-B80AX

Table 4.5

Item		Specification	Condition
Storage in carton box			
	Temperature	-10℃ to 50℃	
	Humidity	90%RH or less	
Water-splash resistance			
		Not applicable.	

4.2　Electrical Performances

4.2.1　IT-3000

Table 4.6

Item		Specification	Remark
Power consumption		DC 4.5A/7.4V to 10.0V	
Anti-static strength			
	Malfunction	±6 KV	150 pF, 330 ohm
	Destruction	±12 KV	

4.2.2　HA-B61IO/HA-B30CHG

Table 4.7

Item		Specification	Remark
Current consumption		Approx. 0.1 A	When IT-3000 is not mounted on.
		Approx. 2.2 A	While supplying power and transmitting data.
Voltage		DC12V±5%	
Anti-static strength			
	Malfunction	±6 KV	150 pF, 330 ohm
	Destruction	±12 KV	
Line noise strength (Level of malfunction)		1,000 V	Pulse frequency: 5 KHz Burst cycle: 300 msec. No. of pulses: 75 pcs Burst period: 15 msec.
Power interruption		10 msec or less	

4.2.3　DT-9721CHGE

Table 4.8

Item		Specification	Remark
Anti-static strength			
	Malfunction	8 KV	200pF, 100 ohm
	Destruction	10 KV	
Power interruption		200 msec.	

4.2.4　DT-9723LI/DT-9723LIC

Table 4.9

Item		Specification	Remark
Anti-static strength			
	Malfunction	6 KV (contact), 8KV (in air)	
	Destruction	8 KV (contact), 15KV (in air)	

4.3 Mechanical Performances

4.3.1 IT-3000

Table 4.10

Item	Specification	Condition
Resistance to drop impact (height)		
In bare condition	120 cm	Onto concrete surface, one time on each of the 6 sides and 4 corners.
In individual carton box	70 cm or less	Onto concrete surface, one time on each of the 6 sides, 1 corner, 3 edges.
In master carton box	50 cm or less	
Resistance to vibration (in package)	1.5 G or less	10 to 55 Hz In X,Y, and Z directions Reciprocally for 30 minutes

4.3.2 HA-B61IO/HA-B30CHG

Table 4.11

Item	Specification	Condition
Resistance to vibration (in package)	1.5 G or less	10 to 55 Hz In X,Y, and Z directions Reciprocally for 30 minutes
Resistance to impact		
In bare condition	70 cm	One time for 6 faces onto concrete surface
In individual carton box	70 cm or less	One time for 6 faces, 1 corner and 3 edges
In master carton box	50 cm or less	

4.3.3 DT-9721CHGE

Table 4.12

Item	Specification	Condition
Resistance to vibration	0.75 G	10 to 55 Hz In X,Y, and Z directions Reciprocally for 30 minutes
Resistance to impact		
In bare condition	70 cm	One time for 6 faces onto a piece of lauan
In individual carton box	70 cm	One time for 6 faces, 1 corner and 3 edges
In master carton box	70 cm	

4.3.4 DT-9723LI/DT-9723LIC

Table 4.13

Item	Specification	Condition
Resistance to vibration	1.5 G or less	10 to 55 Hz In X,Y, and Z directions Reciprocally for 30 minutes
Resistance to impact		
In bare condition	70 cm or less	One time for 6 faces onto P-tile surface.
In individual carton box	70 cm or less	One time for 6 faces, 1 corner and 3 edges
In master carton box	70 cm or less	onto concrete surface.

4.3.5 HA-B80AX

Table 4.14

Item	Specification	Condition
Resistance to impact		
In individual carton box	70 cm	One time for 6 faces, 1 corner and 3 edges
In master carton box	70 cm	

4.4 Reliability

4.4.1 IT-3000

Table 4.15

Item		Specification	Remark/Condition
Service life			
Backlight		10,000 hours	At half-life period, ordinary temperature
MTBF		20,000 hours	Electronic parts only
No. of times of installing/removing the paper holder to/from the terminal		500 times	
No. of times of opening/closing the paper outlet cover		5,000 times	
No. of times of cutting paper with the cutter on the printer		15,000 times or greater	
Printer life		50 Km	In the direction of paper feeding. With print ratio of 25% (excluding label papers)
C-MOS Imager		70,000 hours	
Trigger key		1,000,000 times	For each trigger key (R) or (L).
Other keys		500,000 times	For each key.
Touch panel	Tapping with the stylus	800,000 times	With 0.8R polyester stylus with load of 250 g applied
	Writing	100,000 characters with Katakana characters	
No. of times of mounting /dismounting the terminal on/from the cradle		10,000 times	
No. of times of connecting/removing the power jack of AC adaptor		1,000 times	
No. of times of opening/closing the power jack cover		1,000 times	
No. of times of installing/removing the battery pack to/from the battery compartment		5,000 times	
No. of times of opening/closing the battery pack cover		5,000 times	
No. of times of installing/removing an SD memory card to/from the slot		5,000 times	
No. of times of opening/closing the SD memory card cover		5,000 times	
No. of times of installing/removing a PC card to/from the PC card slot		5,000 times	
No. of times of opening/closing the PC card slot cover		5,000 times	
No. of times of installing/removing a device to/from the 14-pin serial connector on the terminal		5,000 times	
No. of times of opening/closing the 14-pin interface cover		5,000 times	
No. of times of opening/closing the 8-pin interface cover		5,000 times	

Continue.

No. of times of reading data on magnetic card via the MCR	200,000 times	
No. of times of installing/removing the splash protect cover	500 times	
No. of times of opening/closing the splash protect cover	5,000 times	
No. of times of mounting/dismounting the neck strap	100 times	
Strength of the neck strap	Tensile strength 15 Kg per 5 seconds	
Durability of hooks for the hand strap on the terminal	100 times	
Strength of the hand strap	Tensile strength 15 Kg per 5 seconds	
Mounting/removing the stylus to/from the stylus holder	20,000 times	
No. of times of installing/removing the screen protect cover to/from the terminal	500 times	
No. of times of opening/closing the screen protect cover	5,000 times	

4.4.2 HA-B61IO/HA-B30CHG

Table 4.16

Item		Specification	Remark/Condition
MTBF for electronics parts		50,000 hours	
Mounting/removing IT-3000 to/from Cradle		20,000 times	
Switch	Power switch	5,000 times	
	DIP switch	10 times	Applicable to HA-B61IO only.
No. of ON/OFF times of the connector	USB	500 times	Applicable to HA-B61IO only.
	RS-232C	500 times	Applicable to HA-B61IO only.
	RS-422	100 times	Applicable to HA-B61IO only.
No. of ON/OFF times of the power jack		1,500 times	

4.4.3 DT-9721CHGE

Table 4.17

Item	Specification	Remark/Condition
MTBF for electronics parts	300,000 hours	

4.4.4 DT-9723LI/DT-9723LIC

Table 4.18

Item	Specification	Remark/Condition
Battery charge-discharge cycle	90 percent of the capacity at 300 cycles	Environment temperature: 23±2℃
	70 percent of the capacity at 500 cycles	Discharge current: 1.1A constant current

4.5 Compliance

4.5.1 IT-3000

Compliances with EMC, EMI, Safety, Laser Safety, Bluetooth Type Approval

Table 4.19

Model	Compliance Standard			
	Europe (ETSI)			
	EN301.489-17 (EMI,EMS)	EN300.328-2 (Bluetooth)	EN55024 (EMC)	EN60950 (Safety)
IT-3000M53E	Yes	Yes	Yes	Yes
IT-3000M54E2	Yes	Yes	Yes	Yes
IT-3000M55E	Yes	Yes	Yes	Yes
IT-3000M56E	Yes	Yes	Yes	Yes
IT-3000M55U				
IT-3000M56U				

Table 4.20

Model	Compliance			
	USA			
	FCC Part 15B Class B (EMI)	FCC Part 15C (Bluetooth)	UL60950 (Safety)	FDA Accession no. (Laser Safety)
IT-3000M53E	Yes	Yes	Yes	
IT-3000M54E2	Yes	Yes	Yes	
IT-3000M55E	Yes	Yes	Yes	Yes
IT-3000M56E	Yes	Yes	Yes	Yes
IT-3000M55U	Yes	Yes	Yes	Yes
IT-3000M56U	Yes	Yes	Yes	Yes

Column in gray color: not applicable.

4.5.2 HA-B61IO/HA-B30CHG

Table 4.21

	Standard	
	Europe	USA
EMC	EN55022:1998+A1:2000 Class B	FCC Part 15B Class B
	EN55024:1998+A1:2001 Class B	
Safety	EN60950	UL1950 3 Edition

4.5.3 AD-S42120AE

Table 4.22

	Compliance Standard	
	Europe	USA
Safety	EN60950 (1991) 2nd edition	UL1950 3 Edition

4.5.4   DT-9721CHGE

Table 4.23

	Standard		
	Europe	USA	
EMC	EN55022:1998+A1:2000 Class B	FCC Part 15B Class B	
	EN55024:1998+A1:2001 Class B		
	EN61000 3-2/3-3		
Safety	EN60950	UL1310 CSA C22.2 No. 223 (cUL)	

4.5.5   DT-9723LI/DT-9723LIC

Table 4.24

	Standard	
	Europe	USA/Canada
Safety	EN60950	UL1310 CSA C22.2 No. 223 (cUL)

5. Cable Specifications

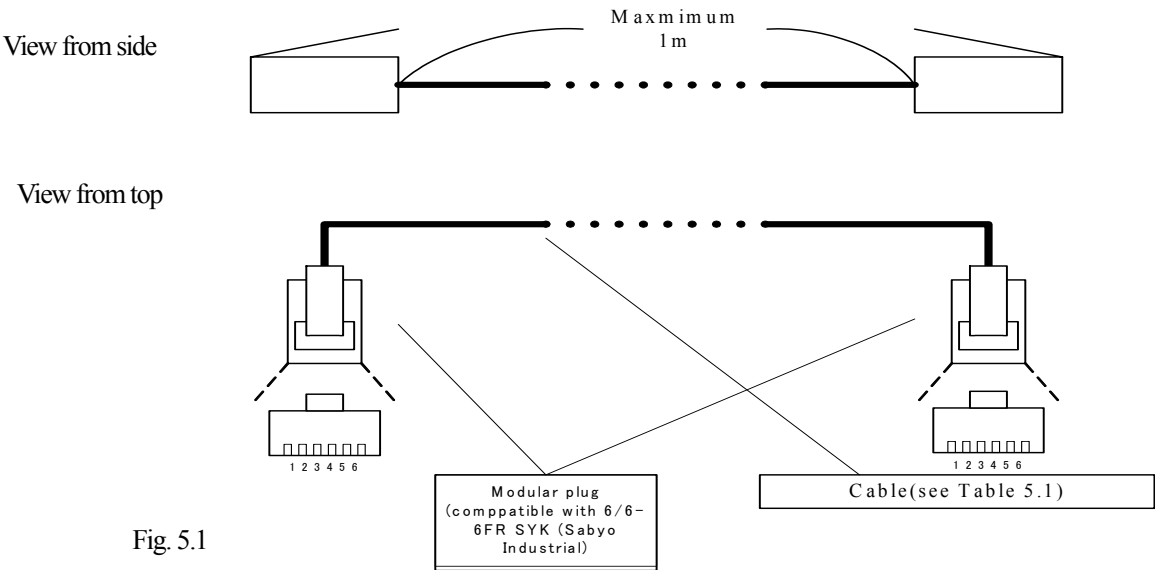## 5.1 For Chain Connection And Short Length

Length;   1 meter or less

View from side

Maxmimum 1 m

View from top

1 2 3 4 5 6

1 2 3 4 5 6

Modular plug (comppatible with 6/6-6FR SYK (Sabyo Industrial)

Cable(see Table 5.1)

Fig. 5.1

Table 5.1   Specifications of the cable

Cable		
Core wire	Conductor	20/0.1A
	Insulator	Semi-hard material P.V.C.
	Finish of external shape	20/0.1A
Sheath	Insulator	P.V.C.
	Finish of external shape	$\phi 4.3 \pm 0.1$mm
Characteristics	Conductance resistance	0.12Ω per meter or less
	Insulation resistance	$50M\Omega$ or more

Pin layout diagram of cable for chain connection and short distance (pin-to-pin straight connection)

Wiring

Cradle at lower position under the chain connection

Pin no.	Signal
1	IRS+
2	IRS-
3	ISD+
4	ISD-
5	ORD+
6	ORD-

Pin no.	Signal
1	ORS+
2	ORS-
3	OSD+
4	OSD-
5	IRD+
6	IRD-

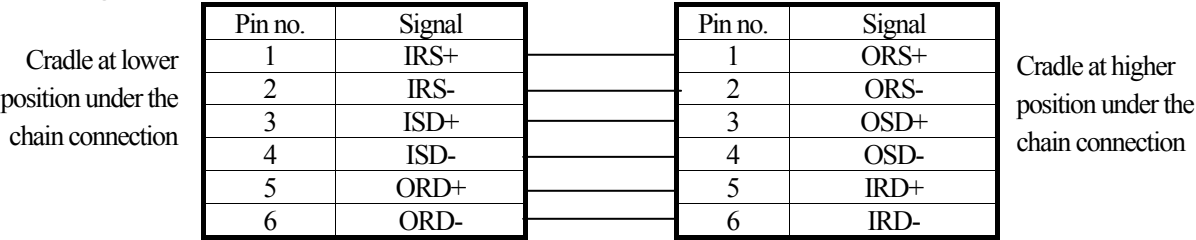Cradle at higher position under the chain connection

Fig. 5.2

5.2   For Chain Connection And Long Length

For a cable with its length longer than one meter, no dedicated cable from CASIO is available. Arrange one locally available that can meet the specifications described below.
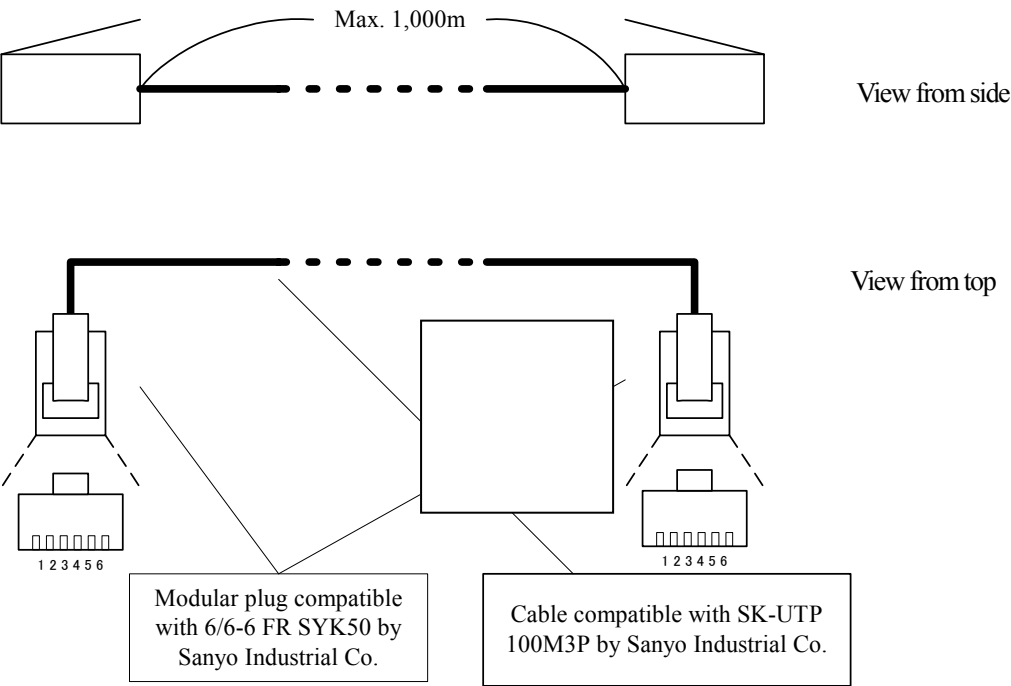
Length; 1 meter or longer

Max. 1,000m

View from side

View from top

Modular plug compatible with 6/6-6 FR SYK50 by Sanyo Industrial Co.

Cable compatible with SK-UTP 100M3P by Sanyo Industrial Co.

1 2 3 4 5 6

1 2 3 4 5 6

Fig. 5.3

Pin layout diagram of cable for chain connection and long distance (pin-to-pin straight/twist-pair connection)

Wiring

Pin no.	Signal		Pin no.	Signal
1	IRS+	XXXXXX	1	ORS+
2	IRS-		2	ORS-
3	ISD+	XXXXXX	3	OSD+
4	ISD-		4	OSD-
5	ORD+	XXXXXX	5	IRD+
6	ORD-		6	IRD-

Cradle at lower position under the chain connection

Cradle at higher position under the chain connection
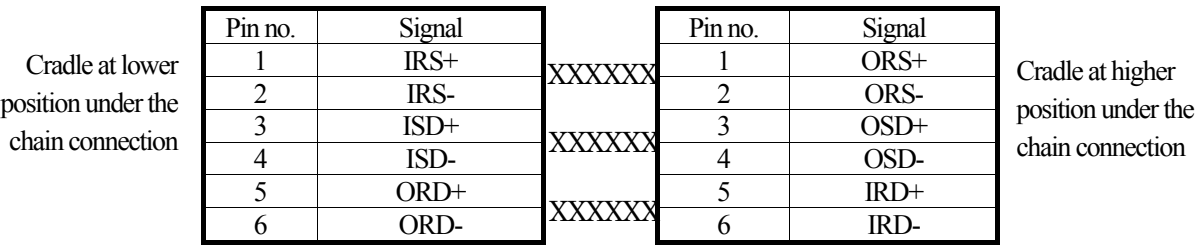
Fig. 5.4

5.3 HA-B80AX

The dedicated RS-232C cross cable, HA-B80AX, is available for connecting the terminal to a PC via the 8-pin serial interface on the terminal. See the specifications below.
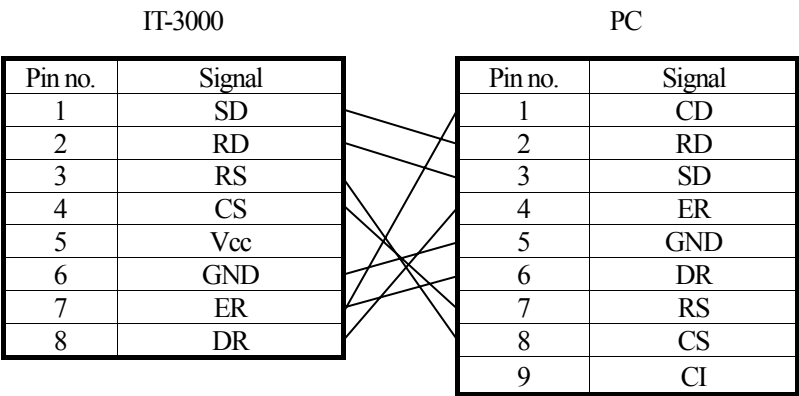
Length; 1,500 mm

Wiring

IT-3000   PC

Pin no.	Signal
1	SD
2	RD
3	RS
4	CS
5	Vcc
6	GND
7	ER
8	DR

Pin no.	Signal
1	CD
2	RD
3	SD
4	ER
5	GND
6	DR
7	RS
8	CS
9	CI

Fig. 5.5

6. Precautions

6.1   Handling Precautions

Precautions for short-term storage (1 to 2 days)
- If the IT-3000 is to be stored over holidays (including Saturday and Sunday), replace the battery pack if installed with a fully charged battery pack. This will conserve the built-in memory backup battery and ensure retention of data on the terminal.
- If there is a possibility of the above or operator error (e.g., a fully charged battery has not been inserted), practice system operation that maintains a backup to avoid loss of data due to consumption of the batteries.

Precautions for long-term storage (over one week)
- Prior to long-term storage (over one week), always back-up data in the terminal to other memory storage device. In addition, remove the lithium-ion battery pack before storage. This can minimize overly discharging the installed battery and minimize consumption of the memory backup battery.
- Do not store the removed battery pack at high temperature. Otherwise, it will discharge at an accelerated rate. Note that the capacity after the battery if it is not used for 10 days at 60°C will be 65%, and that after 20 days at 60°C will be 55%.

6.2   Safety

6.2.1   Battery Pack

- Never disassemble or retrofit the battery pack. The battery pack has safety mechanism and protection means incorporated to avoid hazards. Should they be damaged, the battery pack could become hot, generate smoke, explode, or ignite.
- Never contact the "+" and "-" terminals with metal objects such as a wire. Also, do not carry or store the battery with a metal necklace or hair pin. Otherwise, the battery pack may be short-circuited resulting in an excessive current and causing the battery to become hot, smoke, explode, or catch fire.
- Neither dispose of the battery pack into a fire nor heat it. The insulation may be burnt, the gas exhaust valve or safety mechanism may be damaged, or the internal electrolyte may ignite, causing the battery pack to become hot, smoke, explode, or ignite.
- Neither leave nor use the battery pack in a place with a high temperature (over 80°C) or close to a fire or hot stove. Should the resin separator be damaged due to excessive heat, the battery pack may be short-circuited causing it to become heated, smoke, explode, or ignite.
- Do not soak the battery pack in fresh water or sea water. If the protection means incorporated in the battery pack is damaged, the battery pack may become hot, smoke, explode, or ignite.
- Do not attempt to charge the battery close to a fire, in direct sunlight, or in a car parked in the sun. A heated battery pack will trigger the internal hazard protection means to stop the charging function. Or, the protection means may be damaged and the battery may be charged with an excessive current or voltage, or have abnormal chemical reactions induced to cause it to become hot, smoke, explode, or ignite.
- Do not stick a pin or nail in the battery pack. Neither hit it with a hammer nor stamp it. If this is done, the battery pack may be broken or deformed resulting in a short circuit and causing it to become hot, smoke, explode, or ignite.
- Do not hit or throw the battery pack. If the protection means incorporated in the battery pack is damaged, the battery pack may be charged with an excessive current or voltage, or have abnormal chemical reactions induced to cause it to become hot, smoke, explode, or ignite.
- Never use a battery pack that is significantly damaged or deformed. It may become hot, smoke, explosion, or ignite.
- Do not attempt to solder anything directly on the battery pack surface. The insulation may be damaged or the gas exhaust valve or safety mechanism may be damaged, causing the battery pack to become hot, smoke, explode, or ignite.
- Do not use the battery pack in other device than the terminal. The performance or service life of the battery pack may be reduced or abnormal current may flow to cause it to become hot, smoke, explode, or ignite.
- When charging the battery pack use only dedicated cradles or dedicated battery charger and its AC adaptor available from CASIO, at a temperature between 0°C and 40°C. If the battery pack is charged with battery chargers other than those specified by CASIO, it may be over-charged, or charged with an excessive current, or have abnormal chemical reactions induced, causing it to become hot, smoke, explode, or ignite.
- The battery pack has a specific polarity. Do not force it into the IT-3000. Check the polarity. If the battery pack is connected backwards, it can be incorrectly charged and have an abnormal chemical reaction induced, causing it to become hot, smoke, explode, or ignite.
- If the internal electrolyte of the battery pack leaks and enters the eye, do not rub the eye. Rinse the eye with a sufficient amount of clean water, such as tap water, then immediately consult with a doctor. The electrolyte can cause eye damage.

6.2.2 General

- Be aware of abnormal conditions.
  If the terminal is continuously used in an abnormal condition, a fire or electric shock may occur. If there is an abnormality, immediately turn off the Power switch, and be sure to remove the batteries and unplug the AC adaptor from the wall outlet, then contact a CASIO distributor for repair.
- Supply Current/Voltage
  Do not use the AC adaptor with an AC voltage not rated on the AC adaptor. Also, avoid drawing power from an outlet used for multiple devices. This may cause fire or an electric shock.
- Handling the power cable
  Do not damage, break, retrofit, bend, twist, or stretch the power cable. Also, do not place a heavy object on it or heat it. If this is done, the power cable may be broken and cause a fire or electric shock.
- AC adaptor
  Always use the dedicated AC adaptor. If an AC adaptor that is not specified is used, the battery pack may explode, causing a fire or personal injury.
- Do not touch the AC adaptor with wet hands.
  This may result in an electric shock. Also, place the AC adaptor in a place where it is not subject to dust and water. Dust and dirt may cause fire and smoke, and water may cause an electric shock.
- About the electrolyte
  If the internal electrolyte of the battery leaks and enters the eye, rinse it with a sufficient amount of water, then consult with a doctor
- About the battery pack
  1. Do not place the battery pack in a microwave oven or high-pressure container. If this is done, the battery pack will be quickly heated or the contact seal may be broken causing it to become hot, smoke, explode, or ignite.
  2. If you are aware of an abnormal condition such as a smell, excessive heat, discoloration, deformation, etc., during use, charging and storage of the battery pack, immediately remove it from the IT-3000 and do not use it anymore. If it continuously used without proper treatment, the battery pack may become hot, smoke, explode, or ignite.
  3. If charging cannot be completed even after the specified charging period, stop the charging operation. Otherwise, the battery pack may become hot, smoke, explode, or ignite.
  4. If the battery pack leaks or generates an abnormal smell, immediately remove it away from the fire. Otherwise, the electrolyte that has leaked may ignite causing smoke, an explosion, or fire.
  5. Do not disassemble the battery pack. Neither disassemble nor retrofit this terminal. Personal burns or injury may occur.
- About the power cable and AC adaptor
  1. Do not bring the power cable close to heating equipment such as stove. The cable coating may burn or melt, resulting in fire or electric shock.
  2. Do not bring the power cable close to a container filled with liquid. If the cable becomes wet or should the container be tipped over, a fire or electric shock may result.
  3. Do not unplug the AC adaptor by pulling the power cable by hand. The cable may be damaged causing a fire or electric shock. Always hold the plug of the cable.
  4. When cradle or battery charger is not used for an extended period of time, e.g. during absences, unplug the AC adaptor from the wall outlet.

- About the battery
    1. Do not attempt to disassemble or solder the battery. Also, do not heat or throw the battery into a fire.
    2. When the button-type battery (memory backup battery) used in this terminal is removed, exercise care so as not to accidentally swallow it. Remain aware of the danger to infants. Store the button-type battery in an infant-safe location. Should the battery be swallowed, immediately consult a doctor.
    3. If the battery is improperly used, the electrolyte may leak and soil other objects, resulting in fire and personal injury. Be sure to observe the following precautions:
    4. Make sure of the polarity (+, or -) of the battery when installing it.
    5. Do not leave this terminal unused for an extended period of time with the battery installed.
- About the battery pack
  Do not use the battery pack in a place where it will be exposed to static electricity. The battery pack may become hot, explode, or ignite.
- Avoid exposing it to water and foreign matter
  Should foreign matter (metal chips, water, liquid chemicals) enter inside the terminal, immediately turn off it, remove the battery, unplug the AC adaptor if connected, then contact a CASIO distributor.
- Memory protection
    1. Contents of the terminal should always be backed up in personal computer to make a separate record from that on the terminal. The contents of the memory may accidentally be lost due to battery power consumption, etc. This also occurs when this terminal malfunctions or is repaired.
    2. When replacing the battery, always refer to the user's guide. Improper battery replacement may lead to unexpected loss or alteration of data.
- Place of installation
    1. Do not place the terminal in an environment with a significant amount of moisture or dust. Otherwise, a fire or electric shock may occur.
    2. Do not use the terminal in the vicinity of a cooking table, humidifier, etc., where it will be subjected to oily smoke or vapor. Otherwise, a fire or electric shock may occur.
    3. Do not place the terminal in an unstable situation, such as on a wobbling platform or shelf. It may fall and cause personal injury.
    4. Do not throw the terminal into a fire. This may cause a fire or personal injury due to explosion of the terminal.